700 **ZEOLITE**
701 .Organic compound used to form zeolite
702 ..Organic template used
703 ...Mixed template
704 ...Nitrogen containing
705 ....Amine
706 .....Cyclic
707 .....Hydroxyl
708 .....Diamine
709 .Seed used
710 .Aging to induce zeolite formation from inorganic mixture
711 ..With physical treatment
712 .Synthesized from naturally occurring product
713 .Isomorphic metal substitution
714 ..Acid treatment
715 ...Halogen containing acid
716 .With change of synthesized zeolite morphology
717 ..Physical treatment
718 .Structure defined X-ray diffraction pattern
1 **TREATING MIXTURE TO OBTAIN METAL CONTAINING COMPOUND**
2 .Radioactive metal (At. No. 84+ or radioactive isotope of another metal)
3 ..Actinide series metal (At. No. 89+)
4 ...Removing cladding or coating from fuel element
5 ...Fusing
6 ...Ion exchanging or sorbing
7 ....Organic synthetic resin
8 ...Liquid-liquid extracting
9 ....Organo-nitrogen solvent
10 ....Organo-phosphorus solvent
11 ...Forming insoluble substance in liquid
12 ....By coprecipitating with carrier
13 .....Carrier contains bismuth
14 .....Carrier contains lanthanum
15 ....Forming compound containing plural metals or metal and ammonium
16 ....Forming peroxide (e.g., U04, etc.)
17 ....Carbonate leaching
18 ....Acid leaching
19 ...Volatizing
20 ...Acid leaching
21.1 .Rare earth metal (At. No. 21, 39, or 57-71)
21.5 ..Ion exchanging or liquid-liquid extracting
22 .Platinum group metal (Ru, Rh, Pd, Os, Ir, or Pt)
23 .Group IB metal (Cu, Ag, or Au)
24 ..Ion exchanging or liquid-liquid extracting
25 ..Sorbing or magnetic separating
26 ..Flotation
27 ..Leaching, washing, or dissolving
28 ...Specified particle size
29 ...With a cyanide compound
30 ....And pressurizing
31 ....And agitating
32 ...With ammonia or ammonium containing compound
33 ....Specified temperature
34 ...Forming insoluble substance in liquid
35 ....Forming oxide or carbonate
36 ....Sulfating
37 ....Sulfiding
38 ...Halogenating
39 ....Specified temperature
40 ....With chlorine gas or chlorinated water
41 ...Sulfating
42 ..Forming insoluble substance in liquid
43 ...Specified pH
44 ..Volatizing copper, silver, or gold
45 ..Sulfating
46 ..Halogenating
47 ..Desulfurizing or de-arsenating
48 ..Forming sulfide or matte
49 .Group VIIB metal (Mn, Tc, or Re)
50 ..Forming insoluble substance in liquid
51 ...Halogenating
52 ...Sulfating
53 .Group VIB metal (Cr, Mo, or W)
54 ..Ion exchanging or liquid-liquid extracting
55 ..Forming insoluble substance in liquid
56 ...Ammoniating or nitrating
57 ...Sulfating

58 ...Forming compound containing plural metals
59 ..Volatizing
60 ...As a compound containing chlorine
61 ..Forming compound containing plural metals
62 .Group VB metal (V, Nb, or Ta)
63 ..Ion exchanging or liquid-liquid extracting
64 ..From organic liquids
65 ..Forming insoluble substance in liquid
66 ...Hydroxylating or hydrating
67 ...Ammoniating or sulfating
68 ..Leaching, washing, or dissolving
69 .Group IVB metal (Ti, Zr, or Hf)
70 ..Ion exchanging or liquid-liquid extracting
71 ..Forming compound containing plural metals
72 ...Halogen containing
73 ..Separating Group IVB metals from each other
74 ..Utilizing fluidized bed
75 ..Volatizing
76 ...Titanium, zirconium, or hafnium
77 ....Removing undesirable matter from vapor
78 ....Specified physical form of feed solids
79 ....Contacting feed solids with chlorine gas
80 ..Chemically converting for physical solid-solid separation
81 ..Treating with nitrogen or nitrogenous compound
82 ..Treating with sulfur or halogen containing acid
83 ...Forming metallic iron or insoluble iron containing compound
84 ..Treating with compound containing alkali metal or alkaline earth metal
85 ..Forming insoluble compound containing Group IVB metal
86 ..Dissolving or leaching of iron
87 .Group VA metal or arsenic (Sb, Bi, or As)
88 ..Volatizing
89 .Group IVA metal (Ge, Sn, or Pb)
90 ..Detinning
91 ...Treating with free halogen or hydrogen halide
92 ..Forming insoluble substance in liquid
93 ...Pressurizing or agitating during reaction
94 ...Halogenating
95 ...Nitrating or sulfating
96 ..Volatizing germanium or tin
97 ..Volatizing lead
98 ..Leaching, washing, or dissolving
99 .Group IIB metal (Zn, Cd, or Hg)
100 ..Ion exchanging or magnetic separating
101 ..Forming insoluble substance in liquid
102 ...Agitating during reaction
103 ...Halogenating
104 ...Hydroxylating or hydrating
105 ...Carbonating
106 ...Sulfating
107 ..Volatizing zinc, cadmium, or mercury
108 ...Mixture contains lead
109 ..Leaching, washing, or dissolving
110 ..Desulfurizing
111 .Group IIIA metal or beryllium (Al, Ga, In, Tl, or Be)
112 ..Ion exchanging or liquid-liquid extracting
113 ..Magnetic separating
114 ..Forming compound containing ammonium and metal
115 ..Forming compound containing plural metals
116 ...And halogen
117 ...And sulfur
118.1 ...Aluminosilicate other than zeolite
119 ...Alkali metal aluminate
120 ....From alunite
121 ....From bauxite
122 ..Forming insoluble substance in liquid
123 ...Subjecting mixture to pressure, vacuum, or steam
124 ...Agitating during reaction
125 ...Nitrating

126 ...Halogenating
127 ...Hydroxylating or hydrating
128 ...Sulfating
129 ...Carbonating
130 ..Destroying or separating organic impurity
131 ..Leaching, washing, or dissolving
132 ...With acid
133 ..Volatizing
134 ...Beryllium
135 ...Group IIIA metal
136 ....Utilizing elemental halogen as reactant
137 ..Utilizing carbon as reducing agent
138 .Iron group metal (Fe, Co, or Ni)
139 ..Ion exchanging or liquid-liquid extracting
140 ..Forming insoluble substance in liquid
141 ...Subjecting mixture to pressure, vacuum, or steam
142 ...Agitating during reaction
143 ...Utilizing or forming nitrogenous compound
144 ....Carbonating, hydroxylating, or hydrating
145 ....Sulfating
146 ...Sulfating
147 ....Halogenating, hydroxylating, or hydrating
148 ..Utilizing fluidized bed
149 ..Volatizing iron, nickel, or cobalt
150.1 ..Leaching, washing, or dissolving
150.2 ...Spent catalyst
150.3 ...Treatment of iron containing waste mixture
150.4 ...Treatment of matte or nodule
150.5 ....Gas injected into mixture
150.6 ....With electrolytic or magnetic separation
151 ..Converting metal to magnetic form
152 ...At specified temperature
153 ..Desulfurizing
154 ...At specified temperature
155 .Alkaline earth metal (Mg, Ca, Sr, or Ba)
156 ..Magnetic separating
157 ..Ion exchanging or liquid-liquid extracting
157.2 ..Phosphate rock or ore
157.3 ...Acid treatment
157.4 ....Sulfating
157.5 ..Phosphorous or phosphorous compound containing waste as feed
158 ..Forming insoluble substance in liquid
159 ...Subjecting mixture to pressure, vacuum, or steam
160 ...Agitating during reaction
161 ...Specified particle size used or made
162 ...Nitrating or ammoniating
163 ...Halogenating
164 ...Hydroxylating or hydrating
165 ...Carbonating
166 ...Sulfating
167.1 ..Treating asbestos
168 ..Mixing fuel with starting mixture
169 ..Separating magnesium and calcium from each other (e.g., treating dolomite, etc.)
170 ..Treating impure sulfate (e.g., barite, etc.)
171 ...Calcining gypsum
172 ....With steam or at specified temperature
173 ..Treating impure carbonate (e.g., oyster shells, etc.)
174 ...Forming calcium carbide
175 ...Calcining
176 ....Utilizing vacuum or steam
177 ....With agitating or at specified temperature
178 ..Mixture contains halogen or sulfur
179 .Alkali metal (Li, Na, K, Rb, or Cs)
179.5 ..Lithium
180 ..Decomposing amalgam or other alloy
181 ..Ion exchanging or liquid-liquid extracting
182 ..Regenerating solution
183 ...Hydroxide solution
184 ..Forming insoluble substance in liquid
185 ...Fluorinating or defluorinating
186 ...Carbonating
187 ....Utilizing or forming nitrogenous compound
188 ....Subjecting mixture to pressure, vacuum, or steam

189 ....Utilizing carbon dioxide as reactant
190 .....Mixture contains metal chloride
191 ....Halogenating
192 ....Hydroxylating or hydrating
193 ....Sulfating
194 ...Utilizing or forming nitrogenous compound
195 ...Subjecting mixture to pressure, vacuum, or steam
196 ...Agitating during reaction
197 ...Halogenating
198 ...Hydroxylating or hydrating
199 ...Sulfating
200 ..Volatizing an alkali metal
201 ..Agitating during heating or reaction
202 ..Treating with acid or acid salt
203 ..Subjecting mixture to pressure, vacuum, or steam
204 ...Mixture contains organic impurity
205 ...Leaching or forming water soluble substance
206.1 ..Mixture contains organic or carbonaceous impurity
206.2 ...Alkali carbonate from trona
207 ...Burning the impurity
208 ..Water leaching or forming water soluble substance
209 ..Carbonating
210 **MODIFYING OR REMOVING COMPONENT OF NORMALLY GASEOUS MIXTURE**
210.5 .Direct contact with molten material
212 .Mixture is exhaust from internal-combustion engine
213.2 ..Utilizing as solid sorbent, catalyst, or reactant a material containing a transition element
213.5 ...Group VIII element
213.7 ...Including successive stage treatments to modify or remove a different component in each stage
219 .Molecular oxygen or ozone component
220 .Carbon dioxide or hydrogen sulfide component
221 ..Utilizing thionate or thiosulfate as reactant
222 ..Reacting mixture with sulfur dioxide, sulfite, or bisulfite
223 ..Utilizing reactant containing arsenic, phosphorus, or boron
224 ..By oxidizing or burning component
225 ..By suspension of metal oxide or hydroxide particles in liquid
226 ..Utilizing organic reactant
227 ...Phenolate or phenolic type
228 ...Amine
229 ....Ethanolamine
230 ..Utilizing solid sorbent, catalyst, or reactant
231 ...Iron oxide or hydroxide
232 ..Utilizing carbonate as reactant
233 ...And regenerating reactant by incoming actifying gas
234 ..Utilizing ammonium or metal hydroxide solution
235 .Nitrogen or nitrogenous component
236 ..Component also contains carbon (e.g., cyanogen, hydrogen cyanide, etc.)
237 ..Ammonia
238 ...Utilizing liquid as reactant
239.1 ..Utilizing solid sorbent, catalyst, or reactant
239.2 ...Zeolite
240 R .Halogenous component
241 ..Free halogen
240 S ..Solid removal agent
242.1 .Sulfur or sulfur containing component
242.2 ..Utilizing reactant having organic portion to remove or modify sulfur or sulfur containing component
242.3 ...Organic acid
242.4 ...Alcohol, arylhydroxide, or polyol
242.5 ...Sugar
242.6 ...Heterocyclic
242.7 ...Amine
243.01 ..Utilizing aqueous reactant to remove or modify sulfur or sulfur containing component
243.02 ...And addition of gaseous reactant
243.03 ....Oxygen
243.04 ...Ion separation step
243.05 ...With component added to inhibit corrosion or scaling of processing apparatus
243.06 ...Ammonium compound reactant

243.07 ...Transition metal or compound thereof reactant
243.08 ...Alkali or alkali earth compound reactant
243.09 ....Sulfite
243.1 ....And additional ionic reactant
243.11 ...And subsequent reactive treatment to remove sulfur from spent reactant
243.12 ....Gaseous treatment
244.01 ..Utilizing solid reactant or catalyst to remove or modify sulfur or sulfur containing component
244.02 ...Reactant or catalyst on support
244.03 ....Carbonaceous support
244.04 ....Aluminosilicate support
244.05 ...Reactant added to fuel for reaction in gas mixture
244.06 ...Transition metal or compound thereof reactant
244.07 ...Alkali or alkaline earth or compound reactant
244.08 ....Carbonate
244.09 ...Catalyst
244.1 ....Transition metal or compound thereof catalyst
244.11 ....Zeolite containing
245.1 .Organic component
245.2 ..Utilizing liquid reactant
245.3 ..By burning or catalytically combusting component
246 .Carbon monoxide component
247 ..Utilizing solid sorbent, catalyst, or reactant
248 .Hydrogen component
215.5 .Solid component
249 **RADIOACTIVE (AT. NO. 84+ OR RADIOACTIVE ISOTOPE OF ANOTHER ELEMENT)**
250 .Transuranium compound
251 ..Plutonium containing
252 .Thorium compound
253 .Uranium compound
254 ..Binary compound
255 ...Hydrogen containing
256 ...Carbon containing
257 ...Chlorine containing
258 ...Fluorine containing
259 ....Tetrafluoride
260 ...Oxygen containing
261 ....Dioxide
262 **INERT OR NOBLE GAS OR COMPOUND THEREOF**
263 **RARE EARTH COMPOUND (AT. NO. 21, 39, OR 57-71)**
264 **CHANGING COLOR CHARACTERISTIC OF IMPURITY**
265 **WITH ADDITIVE**
266 .For stabilizing crystal size or shape
267 .Including anticaking or antihygroscopic function
268 ..Additive contains organic portion
269 .Including corrosion inhibitor
270 .For sulfur trioxide
271 ..Additive contains metal, boron, or silicon
272 .For hydrogen peroxide
273 ..Additive contains metal, boron, or silicon
274 .Coating or binder
275 .Additive contains metal, boron, or silicon
276 **BORON OR COMPOUND THEREOF**
277 .Oxygen containing
278 ..Binary compound
279 ..Ternary compound containing metal or ammonium
280 ...Utilizing dissolved or liquid reactant
281 ....Peroxide
282 ....Carbon containing
283 ..Ternary compound containing hydrogen
284 .Nitrogen and hydrogen containing
285 ..Ternary compound
286 .Hydrogen and metal or ammonium containing
287 ..Utilizing halogen containing reactant
288 ..Utilizing oxygen containing reactant
289 .Binary compound (e.g., boride, etc.)
290 ..Nitrogen containing
291 ..Carbon containing
292 ..Halogen containing
293 ...Fluorine
294 ..Hydrogen containing
295 ...By reacting metal hydride or organic derivative thereof
296 ...By reacting free hydrogen
297 ..Refractory metal containing (Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, or W)
298 .Elemental boron

299 **PHOSPHORUS OR COMPOUND THEREOF**
300 .Halogen containing
301 ..Fluorine
302 .Nitrogen containing
303 .Sulfur containing
304 .Oxygen containing
305 ..Metal or ammonium containing
306 ...Plural metal or metal and ammonium containing
307 ...Hydrogen containing
308 ....Orthophosphate (e.g., calcium hydroxyapatite)
309 .....Utilizing phosphoric acid or its anhydride as reactant
310 ......And ammonia
311 ...Orthophosphate
312 ....Alkali metal or ammonium containing
313 .....Utilizing phosphoric acid as reactant
314 ...Metaphosphate
315 ...Triphosphate or tetraphosphate
316 ..Ternary compound containing hydrogen
317 ...Orthophosphoric acid
318 ....Utilizing reactant containing silicon or carbon
319 ....Reacting an acid and phosphate rock
320 .....Sulfuric acid
321.1 ....Purification or recovery
321.2 .....Organic solvent extraction
322 .Elemental phosphorus
323 ..Utilizing a phosphate as reactant
324 **SILICON OR COMPOUND THEREOF**
325 .Oxygen containing
326 ..Metal containing (i.e., silicate)
327.1 ...Aluminum containing
327.2 ....Mullite
328.1 ....Aluminosilicate
328.2 .....Crystalline
328.3 ......Mica
329.1 .....X-ray diffraction pattern
330.1 .....Gelling or precipitation
331 ...Alkaline earth metal containing (Mg, Ca, Sr, or Ba)
332 ...Alkali metal containing (Li, Na, K, Rb, or Cs)
333 ....By precipitating or gelling from silicate solution
334 ....By heat treating silica and the alkali metal
335 ..Silica
336 ...By hydrolyzing vapor phase silicon compound
337 ...By oxidizing volatile silicon compound (e.g., combustion, etc.)
338 ...By gelling
339 ...By precipitating
340 ...By purifying sand
341 .Halogen containing
342 ..Halogenated silane
343 ..Volatizing a solid
344 .Binary compound (e.g., silicide, etc.)
345 ..Of carbon (i.e., silicon carbide)
346 ...By reacting vapor phase silicon compound with carbon or carbon containing compound
347 ..Of hydrogen (e.g., silane, etc.)
348 .Elemental silicon
349 ..From silicon containing compound
350 ...Utilizing reducing substance
351 **NITROGEN OR COMPOUND THEREOF (EXCEPT AMMONIUM SALT OF NON-NITROGEN ACID)**
352 .Ammonia or ammonium hydroxide
353 ..From nitride of metal or silicon
354 ..And producing inorganic carbon and nitrogen containing compound
355 ..By hydrolyzing inorganic carbon and nitrogen containing compound
356 ..From ammonium compound
357 ...Utilizing calcium compound
358 ..From organic material containing nitrogen
359 ..From elemental hydrogen and nitrogen
360 ...With exchanging heat between catalyst and synthesis or effluent gas
361 ...Utilizing plurality of catalyst beds or portions
362 ...Utilizing metal containing catalyst
363 ....Alkali or alkaline earth metal
364 .Carbon containing
365 ..And oxygen containing (e.g., fulminate, cyanate, etc.)

366 ..And sulfur containing (e.g., thiocyanate, etc.)
367 ..And iron containing (e.g., ferrocyanide, etc.)
368 ..Cyanamide radical containing
369 ...And hydrogen containing
370 ...Utilizing carbide as reactant
371 ..Ternary compound
372 ...Hydrogen cyanide
373 ....Employing formamide or formate as reactant
374 ....Utilizing nitric oxide or free nitrogen as reactant
375 ....Employing ammonia as reactant
376 .....And using catalyst
377 ....Utilizing metal cyanide as reactant
378 ...Using cyanamide as reactant
379 ...Utilizing hydrogen cyanide as reactant
380 ...Utilizing free nitrogen as reactant
381 ....And using catalyst
382 ....Utilizing carbon reactant from specified source
383 ..Halogen containing
384 ..Binary (e.g., cyanogen, etc.)
385 .Oxygen containing
386 ..Halogen containing
387 ..Hydrogen containing
388 ...Sulfur containing
389 ....Sulfamic acid
390.1 ...Nitric acid
391 ....By reacting a salt and an acid
392 ....Utilizing ammonia as reactant
393 ....Utilizing nitrogen oxide as reactant
394 .....Nitrogen peroxide
394.2 ....Purification or recovery
395 ..Nitrate
396 ...Ammonium containing
397 ...Utilizing ammonium or metal nitrate as reactant
398 ...Utilizing halogen containing reactant
399 ....And nitric acid reactant
400 ..Binary compound (oxide of nitrogen)
401 ...Utilizing nitrosyl chloride as reactant
402 ...Utilizing catalyst
403 ....And ammonia as reactant
404 .....Catalyst is metal oxide
405 ...Nitric oxide (NO)
406 .Binary compound
407 ..Hydrazine or hydrazine hydrate
408 ...Utilizing halogen or sulfur as reactant
409 ..Metal or ammonium containing
410 ...Azide
411 ...Titanium or zirconium containing
412 ...Aluminum containing
413 .Hydrogen containing (e.g., amide, imide, etc.)
414 **CARBON OR COMPOUND THEREOF**
415.1 .Oxygen containing
415.2 ..Percarbonate compound
416 ..Carbonyl
417 ...Metal containing
418 ....Utilizing organic compound as reactant
418.2 ..Carbon monoxide
419.1 ..Carbonate or bicarbonate
420 ...Ammonium containing
420.2 ...Plural metal containing
421 ...Alkali metal containing (Li, Na, K, Rb, or Cs)
422 ....Hydrogen containing (bicarbonate)
423 .....By carbonating ammoniated brine
424 .....By reacting halogen containing compound
425 .....Sesquicarbonate
426 ....Densifying soda ash
427 ....By reacting a bicarbonate
428 ....By reacting sulfur containing compound
429 ....By reacting halogen containing compound
430 ...Alkaline earth metal containing (Mg, Ca, Sr, or Ba)
431 ....By reacting sulfur or halogen containing compound
432 ....By reacting oxide or hydroxide of the metal
433 ...Lead containing
434 ....By reacting compound containing sulfur or a halogen
435 ....By reacting lead acetate or acetic acid
436 .....And utilizing metallic lead as reactant
437.1 ..Carbon dioxide or carbonic acid
438 ...From a carbonate
437.2 ...From carbon monoxide

439 .Binary compound (e.g., carbide, etc.)
440 ..Refractory metal containing
441 ..Calcium containing
442 ...By reacting carbon and inorganic calcium containing compound
443 ..Disulfide
444 ...By reacting free carbon
445 R .Elemental carbon
446 ..Diamond
447.1 ..Fiber, fabric, or textile
447.2 ...Product
447.3 ...From gaseous reactants
447.4 ...Prior treatment before carbonization (except with gaseous oxygen)
447.5 ....With metal, metal compound, or phosphorus compound
447.6 ...Including reaction with gaseous oxygen
447.7 ...In specific atmosphere (other than vacuum or air)
447.8 ...Controlling varying temperature or plural heating steps
447.9 ...Carbonizing cellulosic material
448 ..Graphite
449.1 ..Carbon black (e.g., lampblack)
449.2 ...Treating carbon black
449.3 ....Treating with acid, or gas which forms acid in water
449.4 ....Halogen or compound thereof
449.5 ....Gaseous oxygen containing compound
449.6 ...Utilizing synthetic polymer as reactant
449.7 ....Tire
449.8 ...Solid material in feed
450 ...Directly from fluid hydrocarbon only
451 ....Rapid and discontinuous oxidation
452 ....Including flame impinging on cool surface
453 ....By contacting with catalyst or hot solid surface
454 .....Hot particulate bed or reaction zone lining or refactory
455 ....Specified injection velocity
456 ....Specified injection angle (e.g., helical, tangential, etc.)
457 .....At least one radial inlet
458 ....Gas or vapor only as infeed to process
449.9 ...Liquid feed only
459 ...From carbon monoxide infeed to process
460 ..Treating carbon
461 ..Recovery or purification
445 B ..Fullerene (e.g., C60, C70, etc.)
462 **HALOGEN OR COMPOUND THEREOF**
463 .Plural metal or metal and ammonium containing
464 ..Including fluorine
465 ...Including aluminum
466 .Plural diverse halogens containing
467 .Sulfur containing
468 ..Ternary compound containing oxygen
469 ..Binary compound
470 .Ammonium halide
471 ..Recovery or purification
472 .Ternary compound
473 ..Hypohalite or hypohalous acid
474 ...Calcium hypochlorite
475 ..Halogenate (e.g., chlorates, etc.)
476 ..Perhalate or perhalic acid
477 .Chlorine dioxide
478 ..By reacting a chlorate
479 ...And a nitrogenous or carbonaceous compound
480 ...And sulfur dioxide
481 .Hydrogen halide
482 ..By reacting alkali metal salt with sulfuric acid
483 ..Hydrogen fluoride
484 ...From impure starting material
485 ....Fluorspar
486 ..Utilizing an element as reactant
487 ...Reacting elemental hydrogen and elemental halogen
488 ..Recovery or purification
489 .Binary fluorine containing compound
490 ..Alkali or alkaline earth metal containing
491 .Binary compound containing metal
492 ..Refractory metal (Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, or W)
493 ..Iron group metal or copper (Fe, Co, Ni, or Cu)

494 ..Group IVA metal or copper (Ge, Sn, or Pb)
495 ..Group IIIA metal or beryllium (Al, Ga, In, Tl, or Be)
496 ...Utilizing carbon or carbon containing compound
497 ..Alkaline earth metal (Mg, Ca, Sr, or Ba)
498 ...Anhydrous magnesium chloride
499.1 ..Alkali metal
499.2 ...From carbonaceous compound
499.3 ...Lithium chloride
499.4 ...Sodium chloride
499.5 ....Purification
500 .Elemental halogen
501 ..Ion exchanging or liquid-liquid extracting
502 ..Oxidizing catalytically
503 ..Sorbing
504 ..From mixture containing alkali metal or alkaline earth metal
505 ...Forming insoluble substance in liquid
506 ..By reacting alkali metal halide with sulfur compound
507 ..By reacting hydrogen halide or ammonium halide
508 **SELENIUM OR TELLURIUM OR COMPOUND THEREOF**
509 .Binary compound
510 .Elemental selenium or tellurium
511 **SULFUR OR COMPOUND THEREOF**
512.1 .Oxygen containing
513 ..Persulfate
514 ..Thiosulfate
515 ..Dithionite
516 ...Employing amalgam as reactant
517 ..Metal and ammonium containing
518 ..Plural metal containing
519 ..Bisulfite
519.2 ..Sulfite
520 ...Bisulfate
521 ..Ternary compound containing hydrogen
522 ...Sulfuric acid
523 ....Nitrogenous impurity or utilizing nitrogenous catalyst or reactant
524 .....Lead chamber process
525 ....Starting material includes organic or carbonaceous impurity
526 .....Utilizing pressure or vacuum on mixture
527 .....Adding organic compound to mixture
528 .....Contacting mixture with gas, steam, or vapor
529 ....Subjecting reactants to pressure, vacuum, or steam
530 ....Utilizing metal sulfate
531 ....Purifying acid or reactant
532 ..Sulfur trioxide
533 ...Utilizing catalyst in reaction
534 ....Promoter or successive diverse catalysts
535 ....Catalyst contains oxygen, vanadium, and another metal
536 ....Platinum catalyst
537 .....With sulfate or asbestos carrier
538 ....Oxygen containing catalyst
539 ..Sulfur dioxide
540 ...From acid sludge or waste
541.1 ...Utilizing metal sulfate as reactant
541.4 ....Ammonium sulfate
542 ...Burning or roasting a sulfur compound
543 ...Burning sulfur
544 ..Sulfate
545 ...Ammonium containing
546 ....Utilizing thiocyanate as reactant
547 ....Employing sulfite or bisulfite as reactant
548 ....Using metal sulfate as reactant
549 ....Employing sulfuric acid as reactant
550 .....Ammonia from waste gas
551 ...Alkali metal containing (Li, Na, K, Rb, or Cs)
552 ....Utilizing chloride as reactant
553 ....Dehydrating
554 ...Alkaline earth metal containing (Mg, Ca, Sr, or Ba)
555 ....Calcium
556 ...Aluminum containing
557 ...Copper containing
558 ...Iron containing
559 ...Lead containing
560 .Ternary compound containing hydrogen and metal (e.g., hydrosulfide, etc.)
561.1 .Binary compound
562 ..Polysulfide

563 ..Hydrogen sulfide
564 ...By catalytic reaction
565 ..Utilizing free sulfur as reactant
566 ..Utilizing sulfate or sulfuric acid as reactant
566.1 ..Sulfide of Cd, Zn, or Hg
566.2 ..Sulfide of alkali metal
566.3 ..Sulfide of alkaline earth metal
567.1 .Elemental sulfur
568 ..Chlorinating
569 ..Reducing sulfur dioxide by carbon containing material
570 ...Catalytic reaction
571 ..Reacting a sulfide
572 ...With steam to form hydrogen sulfide
573.1 ...Hydrogen sulfide
574.1 ....With sulfur dioxide
574.2 .....In inorganic liquid
575 .....Utilizing organic solvent or absorbent
576 .....Utilizing promotor containing silica or aluminum
576.2 ....With specified procedure for sulfur recovery or specified conditions for producing sulfur in more recoverable form
576.4 ....By reacting gaseous feed stream with liquid aqueous mixture
576.5 .....Transition metal-containing mixture
576.6 ......Chelated or sequestered transition metal
576.7 .....Organic compound-containing
576.8 ....By reacting gaseous feed with gas containing free oxygen
577 ...Reacting metal sulfide with sulfur dioxide
578.1 ..Purifying crude sulfur
578.2 ...From ore
578.4 ..From liquid or solid compound
579 **OXYGEN OR COMPOUND THEREOF**
580.1 .Water
580.2 ..Heavy water
581 .Superoxide or ozone
582 .Peroxide
583 ..Alkaline earth metal (Mg, Ca, Sr, or Ba)
584 ..Hydrogen
585 ...From persulfuric acid or persulfate
586 ...From inorganic peroxide
587 ...From organic reactant
588 ....By oxidizing hydroquinone or anthraquinone
589 .....Including dissolving reactant in ester containing solvent
590 .....Including dissolving reactant in alcohol containing solvent
591 ....By oxidizing alcohol or hydrocarbon
592.1 .Metal containing
593.1 ..Plural metals or metal and ammonium containing
594.1 ...Iron (Fe) containing
594.2 ....And alkali metal or alkaline earth metal containing
594.3 ...Nickel (Ni) containing
594.4 ....And alkali metal or alkaline earth metal containing
594.5 ...Cobalt (Co) containing
594.6 ....And alkali metal or alkaline earth metal containing
595 ...Chromium (e.g., chromate, etc.)
596 ....And alkali metal, alkaline earth metal, or ammonium containing
597 .....Dichromate
598 ...Titanium (e.g., titanate, etc.)
599 ...Manganese (e.g., manganate, etc.)
600 ...Aluminum (e.g., aluminate, etc.)
601 ...Arsenic (e.g., arsenite, etc.)
602 ....Arsenate
603 .....And lead containing
594.7 ...Bismuth or antimony containing (e.g., bismuthate, antimonate, etc.)
594.8 ...Vanadium, niobium, or tantalum containing (e.g., vanadate, niobate, tantalate, etc.)
594.9 ...Tin, lead, or germanium containing (e.g., stannate, plumbate, etc.)
594.12 ...Zirconium containing (e.g., zirconate, etc.)
594.13 ...Tungsten containing (e.g., tungstate, etc.)
594.14 ...Zinc, cadmium, or mercury containing (e.g., zincate, etc.)

594.15 ...Alkali metal containing (Li, Na, K, Rb, or Cs)
594.16 ...Alkaline earth metal containing (Mg, Ca, Sr, or Ba)
604 ..Group IB metal (Cu, Ag, or Au)
605 ..Group VIIB metal (Mn, Tc, or Re)
606 ..Group VIB metal (Cr, Mo, or W)
607 ...Chromium
608 ..Group IVB metal (Ti, Zr, or Hf)
609 ...Titanium monoxide or sesquioxide
610 ...Titanium dioxide
611 ....Utilizing titanium halide as reactant
612 .....Titanium tetrahalide
613 ......Reacting with oxiding gas
614 ....In fluidized bed
615 ....Utilizing titanium sulfate as reactant
616 .....And utilizing acid
617 ..Group VA metal or arsenic (Sb, Bi, or As)
618 ..Group IVA metal (Ge, Sn, or Pb)
619 ...Lead
620 ....Utilizing metallic lead as reactant
621 .....Molten
622 ..Zinc
623 ...Volatizing zinc
624 ..Group IIIA metal or beryllium (Al, Ga, In, Tl, or Be)
625 ...Aluminum
626 ....Utilizing acid
627 ....Reacting metallic aluminum with water or water vapor
628 ....Forming catalyst, sorbent activated, or narrow pore alumina
629 ....Hydroxide
630 ....Utilizing carbon or compound thereof as reactant
631 ....Utilizing nitrogenous compound as reactant
632 ..Iron
633 ...Ferric oxide
634 ....Gamma form
635 ..Alkaline earth metal (Mg, Ca, Sr, or Ba)
636 ...Process of manufacturing
637 ....Utilizing carbonate as reactant
638 ....By reacting a sulfur containing compound
639 ....By reacting a nitrogenous or halogenous compound
640 ....By hydrating lime
641 ..Alkali metal (Li, Na, K, Rb, or Cs)
642 ...By reacting sulfur containing compound
643 ...By reacting a nitrogenous or halogenous compound
594.17 ..Vanadium (V), niobium (Nb), or tantalum (Ta) containing
594.18 ..Cadmium (Cd) or mercury (Hg) containing
594.19 ..Cobalt (Co) or nickel (Ni) containing
644 **HYDROGEN OR COMPOUND THEREOF**
645 .Binary compound
646 ..Alkali metal containing (Li, Na, K, Rb, or Cs)
647 ..Alkaline earth metal containing (Mg, Ca, Sr, or Ba)
647.7 .Deuterium-containing
648.1 .Elemental hydrogen
649 ..Ortho-para conversion
650 ..By decomposing hydrocarbon
651 ...Catalytic reaction
652 ....Including decomposing water
653 .....Catalyst substance contains nickel
654 ......And another metal
655 ..By reacting water with carbon monoxide
656 ...Utilizing metal oxide catalyst
657 ..By reacting water or aqueous solution with metal or compound thereof
658 ...Iron
658.2 ..By direct decomposition of binary compound; e.g., chemical storage, etc.
658.3 ..By reaction of impurities in a stream containing elemental hydrogen
658.5 **EXTRACTING, LEACHING, OR DISSOLVING**
659 **MISCELLANEOUS PROCESS**

FOREIGN ART COLLECTIONS

FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or nonpatent literature from subclasses that have been reclassified have been transferred directly to the FOR Collection listed below. These Collections contain ONLY foreign patents or nonpatent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

OXYGEN OR COMPOUND THEREOF (423/579)

FOR 100 .Metal containing (423/592)
FOR 101 ..Plural metals or metal and ammonium (423/593)
FOR 102 ...Iron, cobalt, or nickel (e.g., ferrite, etc.) (423/594)

DIGESTS

DIG 1 **WASTE ACID CONTAINING IRON**
DIG 2 .Sulfuric acid
DIG 3 **PAPERMAKING LIQUOR**
DIG 4 **MANGANESE MARINE MODULES**
DIG 5 **AUTOMATIC (INCLUDING COMPUTER) CONTROL**
DIG 6 **TEMPERATURE CONTROL**
DIG 7 **ISOTOPE SEPARATION**
DIG 8 **CORROSION OR DEPOSITION INHIBITING**
DIG 9 **REACTION TECHNIQUES**
DIG 10 .Plasma energized
DIG 11 .High pressure
DIG 12 .Molten media
DIG 13 .Catalyst contact
DIG 14 .Ion exchange; chelation or liquid/liquid ion extraction
DIG 15 .Comminution
DIG 16 .Fluidization
DIG 17 .Microbiological reactions
DIG 18 **TREATING TRASH OR GARBAGE**
DIG 19 **GEOTHERMAL STEAM PURIFICATION**
DIG 21 **FAUJASITE; E.G., X, Y, CZS-3, ECR-4, Z-14HS, VHP-R**
DIG 22 **MFI; E.G., ZSM-5. SILICALITE, LZ-241**
DIG 23 **FERRIERITE; E.G., SR-D ZSM-33**
DIG 24 **LTA; E.G., A, ALPHA, ZK-4, ZK-21, ZK-22**
DIG 25 **MORDENITE; E.G., NA-D, PTTILOLITE, ZEOLON**
DIG 26 **MAZZITE; E.G., ZSM-4, OMEGA**
DIG 27 **BETA; E.G., NU-2**
DIG 28 **LTL; E.G., BA-G, L, AG-1, AG-2, AG-4, BA-6**
DIG 29 **MEL; E.G., ZSM-11**
DIG 30 **ALPO AND SAPO**
DIG 31 **RHO; E.G., ECR-10, LZ-214**
DIG 32 **SODALITE; E.G., HS, ULTRAMARINE**
DIG 33 **MTW; E.G., ZSM-12, NU-13, CZH-5, TPZ-3**
DIG 34 **PENTASILS OTHER THAN MFI AND MEL; E.G., AZ-1, TZ-01, TZ-02, TRS, ZBM-10**
DIG 35 **TON; E.G., THETA-1, ISI-1, KZ-2, ZSM-22, NU-10**
DIG 36 **MTT; E.G., ZSM-23, ISI-1, KZ-1, EU-1, EU-4, EU-13**
DIG 37 **LEV; E.G., LEVYNIK, ZMT-45, ZK-20, NU-3, LZ-132, LZ-133**
DIG 38 **OFFRETITE; E.G., TMA OFFREITE**
DIG 39 **FULLERENE (E.G., C60, C70, ETC.) DERIVATIVE AND RELATED PROCESS**
DIG 40 **FULLERENE COMPOSITION**